

Amendments to the Claims

Please cancel Claims 3 and 12 without prejudice to or disclaimer of the subject matter recited therein.

Please amend Claims 1 and 10 to read as follows.

1. (Currently amended) A method of filling a buffer portion in a print head with at least one bubble, using a print head comprising a plurality of ejection openings through which ink is ejected, a plurality of channels that are each in communication with a corresponding one of the plurality of ejection openings, a common liquid chamber for supplying ink to the plurality of channels, a buffer portion located at an end of an arrangement direction of said channels and adjoining, in the arrangement direction of said channels, at least one of said channels in communication with at least one corresponding ejection opening to restrain vibration of ink in said common liquid chamber which occurs as a result of ejection of the ink, and bubble generating means for filling the buffer portion with at least one bubble, comprising the steps of:

filling said buffer portion with the at least one bubble by driving said bubble generating means; and

executing a recovery process of discharging the ink through said ejection openings after said bubble filling step, wherein in said recovery process step, excess of the at least one bubble filled in said buffer portion is removed,

wherein during said bubble filling step, the at least one bubble is allowed to grow up to a location of said channel adjacent to said buffer portion by driving said bubble generating means.

Claims 2 and 3 (cancelled)

4. (Previously presented) The method according to Claim 1, wherein the at least one bubble generated by driving said bubble generating means is obtained by precipitating a gas dissolved in the ink.

5. (Previously presented) The method according to Claim 1, wherein during said bubble generating step, said bubble generating means is driven to generate the at least one bubble while preventing film boiling from occurring in the ink.

6. (Previously presented) The method according to Claim 1, wherein said plurality of channels are each provided with an electrothermal converter as means for generating ejection energy that causes the ink to be ejected, and during said bubble generating step, the at least one bubble is generated using said electrothermal converters together with said bubble generating means.

7. (Previously presented) The method according to Claim 1, wherein

said recovery process is a suction recovery process comprising suctioning and discharging the ink through said ejection openings.

8. (Previously presented) The method according to Claim 1, wherein the recovery process is executed before a printing operation.

9. (Previously presented) The method according to Claim 1, wherein before the recovery process, said print head is heated to a temperature used for normal printing or higher.

10. (Currently amended) A printing apparatus able to print an image on a printing medium, using a print head comprising a plurality of ejection openings through which ink is ejected, a plurality of channels that are each in communication with a corresponding one of the plurality of ejection openings, a common liquid chamber for supplying ink to the plurality of channels, a buffer portion located at an end of an arrangement direction of said channels and adjoining, in the arrangement direction of said channels, at least one of said channels in communication with at least one corresponding ejection opening to restrain vibration of ink in said common liquid chamber which occurs as a result of ejection of the ink, and bubble generating means for filling the buffer chamber with at least one bubble, comprising:

recovery process means for causing the ink to be discharged through said ejection openings, wherein

said recovery process means causes the ink to be discharged through said ejection openings after said bubble generating means has filled said buffer portion with at least one bubble, and

said recovery process means discharges the ink through said ejection openings to remove excess of the at least one bubble,

wherein said bubble generating means allows the at least one bubble to grow up to a location of said channel adjacent to said buffer portion.

Claims 11 and 12 (cancelled)

13. (Previously presented) The printing apparatus according to Claim 10, wherein

said bubble generating means generates the at least one bubble by precipitating a gas dissolved in the ink.

14. (Previously presented) The printing apparatus according to Claim 10, wherein

said bubble generating means generates the at least one bubble while preventing film boiling from occurring in the ink.

15. (Previously presented) The printing apparatus according to Claim 10, wherein

said plurality of channels are each provided with an electrothermal converter as means for generating ejection energy that causes the ink to be ejected, and
said bubble generating means generates the at least one bubble together with said electrothermal converter.

16. (Previously presented) The printing apparatus according to Claim 10, wherein

said recovery process means suctions and discharges the ink through said ejection openings.

17. (Previously presented) The printing apparatus according to Claim 10, wherein

said recovery process means discharges the ink through said ejection openings before a printing operation.

18. (Previously presented) The printing apparatus according to Claim 10, further comprising means for heating said print head to a temperature used for normal printing or higher before said recovery process means discharges the ink through said ejection openings.